

Patent Points

NOW STARTING MY 30TH YEAR...

Start-Ups With Patents 6x More Likely to Obtain Financing

Since the 1990's we have been saying that patents help start-up companies obtain VC financing. Now a study out of the EU has confirmed this.

A joint study by the European Patent Office (EPO) and the European Union Intellectual Property Office (EUIPO) found that startups applying for patents and/or trade marks during their initial seed or early growth stages were up to 10.2 times more likely to secure funding. Having the company's patent application granted and issued as a patent increased the odds of funding by another 5x.

Patents increased funding odds by a factor of 6.4, while trademarks increased funding odds by a lower factor of 4.3 for early stage companies. Applying for both patents and trademarks increased funding odds by 10.2x.

Outside of biotech startups, of which almost 50% applied for patents, less than 25% of startups applied for patents. Only about 7% of software

startups had applied for patents while 25% of science and engineering startup had applied for patents.

VC Investors Also Win With Patents !

The study also had good news for VC's and other investors providing the funding. The study found that filing a patent or trademark application doubled the likelihood of a successful exit for the investors.

One caveat is that this study only looked at start-ups in Europe. Start-ups in the US or other countries may receive funding from sources with different requirements than in Europe.

The full study can be found at:

<https://www.epo.org/en/service-support/publications?pubid=943333>

INSIDE

- 2** Skew-Adjusted ADC Patent
- 3** Limited-Energy BMS
- 4** 589 Patents Issued



US011646747B1

(12) **United States Patent**
Lok

(10) **Patent No.:** **US 11,646,747 B1**
(45) **Date of Patent:** **May 9, 2023**

(54) **MULTI-CHANNEL INTERLEAVED ANALOG-TO-DIGITAL CONVERTER (ADC) USING OVERLAPPING MULTI-PHASE CLOCKS WITH SAR-SEARCHED INPUT-CLOCK DELAY ADJUSTMENTS AND BACKGROUND OFFSET AND GAIN CORRECTION**

(56) **References Cited**

U.S. PATENT DOCUMENTS

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7,404,162 B2 7/2008 Matsuo et al.
(Continued)

OTHER PUBLICATIONS

Ru Yi et al., "Digital Compensation for Timing Mismatch in Interleaved ADCs", 2013 Asian Test Sym., Proc. IEEE, Nov. 18, 2013, pp. 134-139.

(Continued)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **17/580,805**

(22) Filed: **Jan. 21, 2022**

Related U.S. Application Data

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(51) **Int. Cl.**
H03M 1/10 (2006.01)
H03M 1/12 (2006.01)
(Continued)

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CPC **H03M 1/1057** (2013.01); **H03M 1/1215** (2013.01); **H03M 1/0624** (2013.01);
(Continued)

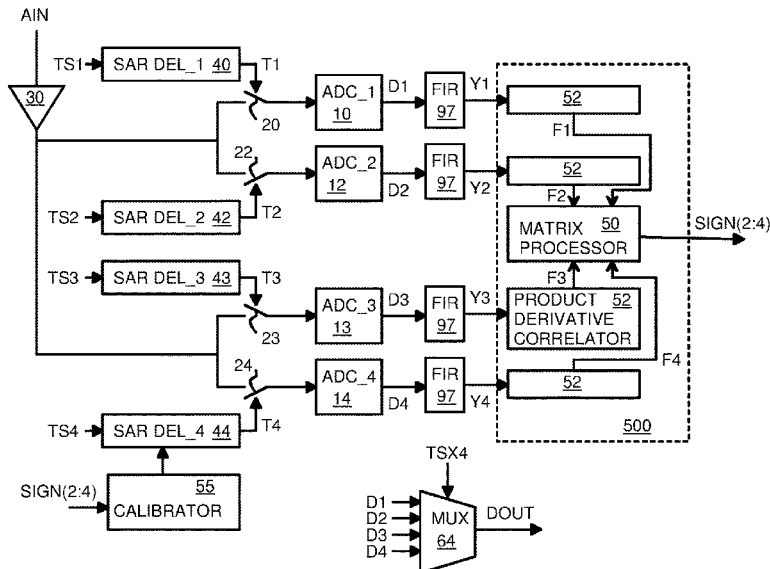
(58) **Field of Classification Search**
CPC H03M 1/1014; H03M 1/1033; H03M 1/12; H03M 1/38; H03M 1/0624; H03M 1/1023

See application file for complete search history.

(57) **ABSTRACT**

An N-channel interleaved Analog-to-Digital Converter (ADC) has a variable delay added to each ADC's input sampling clock. The variable delays are each programmed by a Successive-Approximation-Register (SAR) during calibration to minimize timing skews between channels. Each channel receives a sampling clock with a different phase delay. The sampling clocks are overlapping multi-phase clocks rather than non-overlapping. Overlapping the multi-phase clocks allows the sampling pulse width to be enlarged, providing more time for the sampling switch to remain open and allow analog voltages to equalize through the sampling switch. Higher sampling-clock frequencies are possible than when non-overlapping clocks are used. The sampling clock is boosted in voltage by a bootstrap driver to increase the gate voltage on the sampling switch, reducing the ON resistance. Sampling clock and component timing skews are reduced to one LSB among all N channels.

20 Claims, 15 Drawing Sheets



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589 Patents Issued

After 29 years of writing patents as a full-time Patent Agent, 589 applications that I've written have now issued as patents. Congratulations inventors!

You can view the 589 issued patents I've written at:

www.gpatent.com

Rates Set for 2024

My hourly rate for 2024 will be \$430 per hour, billed in quarter-hour increments. Fixed-price quotes are available for patent applications to facilitate budgeting and avoid expensive surprises.

Prosecution work such as amendments and other paperwork is billed at the hourly rate. Litigation-support work is billed at a higher rate. Patent searches are billed at a flat \$800 for U.S. abstract searches. Patents can be viewed on-line.

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Address Correction Requested